1st Semi-Annual Status Report

For the
Eastern Panhandle WV - Ozone Early Action Compact Area

Introduction & Project Background

In 1997, the United States Environmental Protection Agency (EPA) established a new 8-hour ozone National Ambient Air Quality Standard (NAAQS). This standard was the result of a review of ground level ozone and related health impacts, and was designed to replace the older 1-hour standard. The creation of this new standard was meant to address the cumulative impact of ozone exposure at lower levels for a longer period of time. As such, the new standard is set at a lower level (0.08 parts per million) than the previous standard (0.120 parts per million) and is more protective of human health.

As part of the implementation of the new standard, states submitted area designation recommendations to the EPA in June of 2000 that identified potential ozone nonattainment areas based on air quality data during 1997 to 1999. The Eastern Panhandle area of West Virginia (Berkeley and Jefferson counties) was identified at that time as one of the potential nonattainment areas, mainly based on the fact that the area is currently part of the Baltimore-Washington DC MSA. No monitors were present in either Berkeley or Jefferson counties during this period.

A number of concerns were raised by the potential nonattainment areas about the adverse impacts of a possible nonattainment designation. In response, the Eastern Panhandle area and West Virginia Department of Environmental Protection began to investigate possible voluntary actions that could be implemented proactively to improve air quality and lessen the possible impact of a formal nonattainment designation in areas that marginally exceed the new standard.

The most promising of the options explored was the EPA's ozone Early Action Compact (EAC) program. The EAC concept was originally developed by several areas in Texas in early 2002 and subsequently endorsed and expanded by the EPA as national voluntary program.

EACs are voluntary agreements by the localities, states, and the EPA to develop Early Action Plans (EAPs) to reduce ozone precursor pollutants and improve local air quality in a proactive manner, and in a shorter time than what would occur through the traditional nonattainment area designation and planning process. These plans must include the same components that make up traditional State Implementation Plans (SIPs). This includes emissions inventories, control strategies, schedules and commitments, and a demonstration of attainment based on photochemical modeling.

The goal of an EAP is to develop a comprehensive strategy that will bring an area into attainment of the 8-hour ozone standard by 2007. This goal is to be achieved by selecting and implementing local ozone precursor pollutant control measures that when combined with other measures on the state and national level, are sufficient to bring the

area into compliance with the standard. If the area is successful in developing a plan that demonstrates attainment of the 8-hour ozone standard by 2007 and continued attainment through 2012, the EPA will defer the effective date of the nonattainment designation for the area. This deferral will remain in place as long as certain milestones are met, such as implementation of local controls by 2005. If all interim milestones are met and the area demonstrates attainment of the standard during the period from 2005 to 2007 through air quality data, then the nonattainment designations will be withdrawn by EPA, without further regulatory requirements. If an area fails at any point in the process, it will revert back to traditional nonattainment status, with all the associated requirements of such a designation.

The Eastern Panhandle area of West Virginia has entered into an Early Action Compact which includes both Berkeley and Jefferson counties. This Compact was signed by all the parties involved and then submitted to the EPA by the required date (December 31, 2002). The area has subsequently established and empowered the Eastern Panhandle Air Quality Task Force to coordinate the development of the ozone early action plan for the area. This Task Force has a diverse and knowledgeable membership, which will greatly aid in the development of a comprehensive plan.

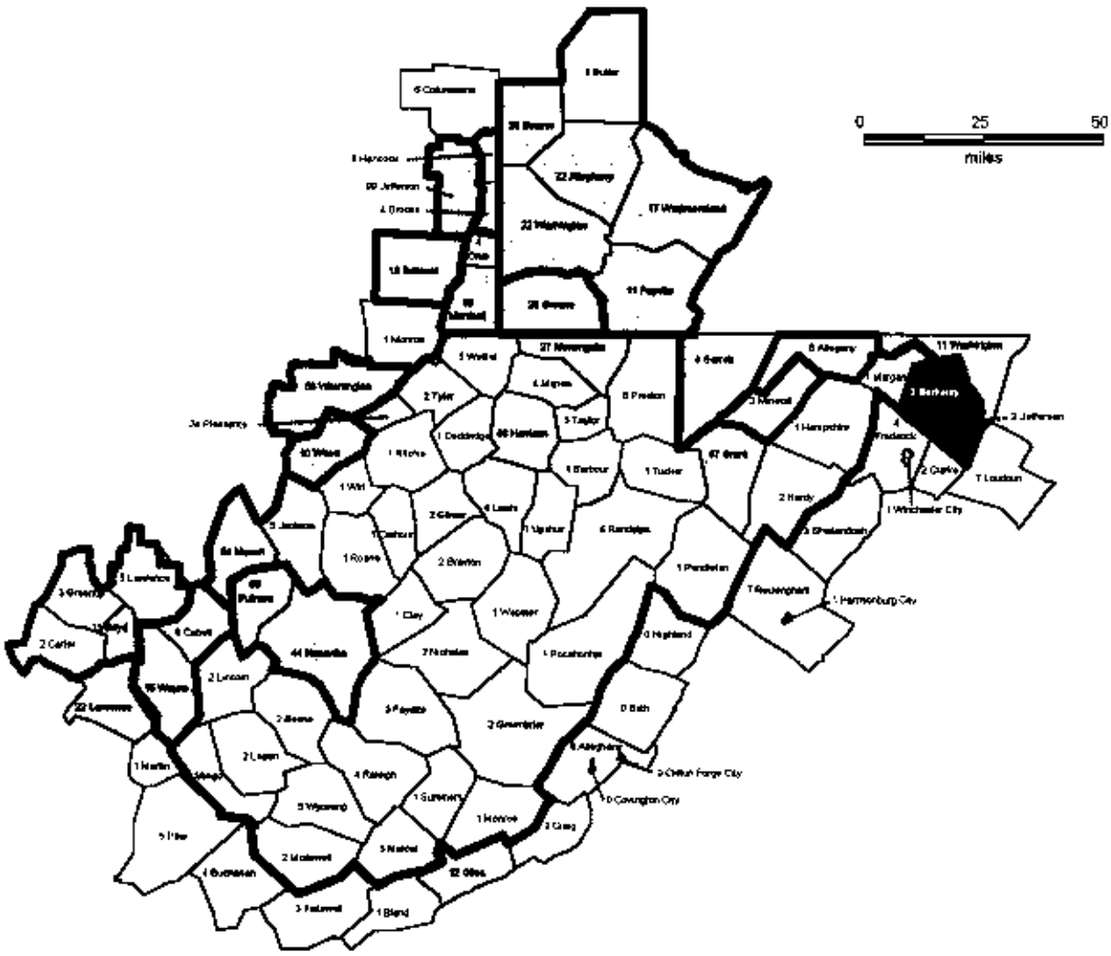
The Eastern Panhandle area, as well as the neighboring Winchester – Frederick County area in Virginia and Washington County area in Maryland, have many similarities including a common geographic location and characteristics, marginal nonattainment air quality levels, and common influences of ozone transport and other external factors. It is extremely important that air quality planning in the Eastern Panhandle be coordinated with Frederick and Washington counties.

The remainder of this status report describes the project area, the significant events and progress made thus far, efforts to encourage public participation in the process, and the technical support activities underway to support the overall planning effort.

Description of Early Action Plan Area

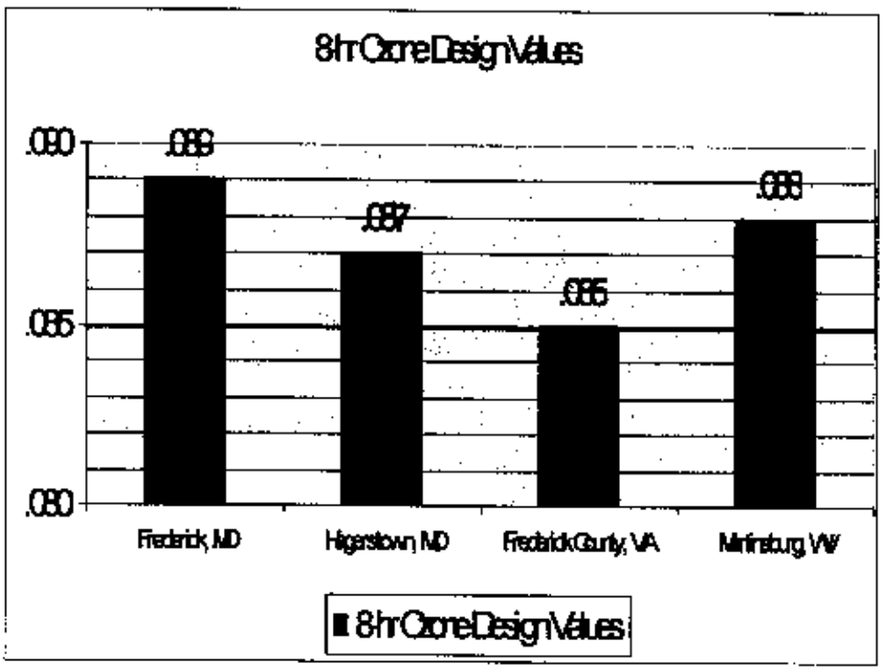
The Early Action Plan for the Eastern Panhandle of West Virginia will include the area of both Berkeley and Jefferson counties. Both counties are relatively rural in character Berkeley County covers 321 square miles and includes the City of Martinsburg, a city of roughly 15,000 people. The entire population of the Berkeley County is approximately 76,000. Jefferson County is smaller, covering 212.4 square miles with a population of approximately 42,190. The three largest towns in Jefferson County are Charles Town (2,907), Ranson (2,951) and Bolivar (1,045).

The map below shows West Virginia and surrounding counties.



The following chart illustrates the ozone design values for the Martinsburg, West Virginia area (Berkeley County) compared to the surrounding counties in both Virginia and Maryland. While ozone concentrations differ between the areas, all are relatively close to the threshold for the 8-hour ozone standard. It is appropriate that air quality planning should be coordinated among these similar areas.

Comparison of Ozone Levels in Neighboring Counties

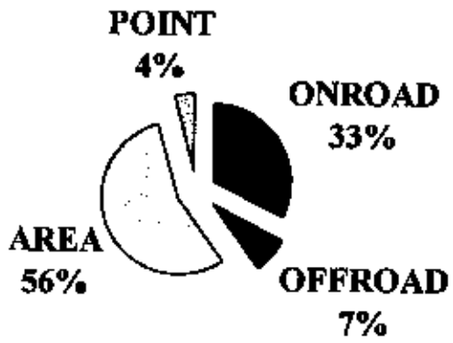


Source: WVDEP (Martinsburg data based on 2-year average, other areas based on 3-year average.)

The following charts show the emissions inventory of ozone precursors in Berkeley and Jefferson Counties. Emissions of volatile organic compounds (VOCs) largely come from area sources. However, there is a substantial on-road component as well. On the other hand, the, the largest share of emissions of nitrogen dioxide (NOX) come from point sources in this area with a smaller, yet substantial portion from mobile sources.

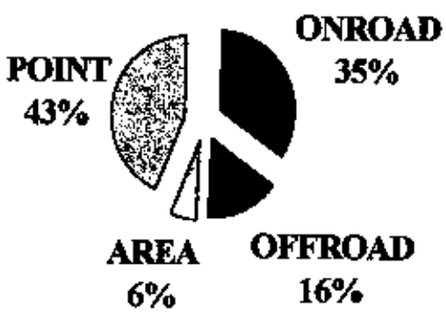
Preliminary
EPA Data
1999 NEI v.2

Berkeley & Jefferson VOC



Preliminary
EPA Data
1999 NEI v.2

Berkeley & Jefferson NOx



PROJECT ORGANIZATION & PROGRESS SUMMARY

Berkeley and Jefferson counties in West Virginia entered into an Ozone Early Action Compact in December of 2002. Discussions with county officials and local economic development authorities continued through the beginning of calendar year 2003. Representatives from the area also participated in Air Improvement Task Force meetings with neighboring Winchester – Frederick County in Virginia.

In late April, the Berkeley County Economic Development Authority, on behalf of Berkeley and Jefferson counties, procured the professional services of Wilbur Smith Associates, a transportation/air quality planning firm to assist in facilitating Air Quality Task Force meetings and developing the required consensus-based documents for the June 16th and 30th submittals to US EPA.

A broad-based group of stakeholders was brought together in April 2003 which became the Eastern Panhandle Air Quality Task Force. The first meeting of the group was held in Martinsburg WV on April 23, 2003 with approximately 27 in attendance. The Task Force members include local government representatives from both counties and the City of Martinsburg, local business and industries, healthcare interests and environmental interests. State Departments of Transportation and Environmental Protection are also participants. (A complete listing of Air Quality Task Force Members is included as Attachment A.)

Additional Task Force meetings have been held in May and June, including public meetings held during the evening hours in both Martinsburg and Charles Town. The focus of these meetings has been two fold:

> First, to engage and inform the public on the air quality problems in the area and the need for an Early Action Plan.
>
> Second, to select those types of local emissions control strategies that will be considered during the coming months for inclusion in the final Early Action Plan for the area.

More detailed summaries of Air Quality Task Force meetings are included in Attachment B. See June 16th submittal for discussion of local control strategies being considered.

AIR QUALITY TECHNICAL SUPPORT ACTIVITIES

The Eastern Panhandle Air Quality Task Force is working closely with both West Virginia Department of Environmental Protection (WVDEP) and the Virginia Department of Environmental Quality (VDEQ). The WVDEP Air Division staff has provided valuable information and technical advice in support of these efforts. They have made numerous presentations on air quality in the panhandle area, and are actively participating in public involvement efforts. The VDEQ Air Division staff is providing emissions modeling and photochemical modeling assistance for the Berkeley – Jefferson counties area.

Following is a summary of required technical activities and the status of those activities being performed by VDEQ.

The air quality planning process is very complex and resource intensive. The VDEQ has committed substantial financial and staff resources to complete this technical analysis for the early action projects. This process typically involves a number of steps to evaluate air quality problems, and then to develop and test control strategies to solve the problem. In general, the major steps of this process are as follows.

- An air quality problem is observed through monitoring or some other mechanism.
- The current air quality conditions are evaluated by estimating baseline emission of the air pollutants contributing to the problem, the simulation of one or more observed events, or "episodes" of high pollution concentrations using a photochemical model. This is done to determine what conditions and factors contribute to these poor air quality events.
- Future air quality is then predicted using the same model by estimating future emissions, selecting emission control measures, and testing these measures to determine whether they will lessen or eliminate the air quality problem.

Two of the major analytical tools used to evaluate air quality as part of this process are the estimation of air pollutants in a given area, commonly referred to as emissions inventories, and regional or urban scale air quality models. Both of these activities are currently underway in order to support the development of a technically sound air quality plan.

Emissions Inventories

Emissions inventories are comprehensive estimates of all air pollutants emitted from all sources in a given geographic area during a given time period. These inventories represent numerous estimates on an individual source basis that are then summarized by major source categories. The inventory development process represents an extensive effort to collect emissions and/or related data combined with complex methods and models to produce the emissions estimates. The major source categories used in the inventory process are:

- **Stationary Point Sources:** Large utility and industrial facilities with significant individual emissions.
- **Mobile Sources:** Motor vehicles operated on public roads such as interstates, freeways, and local roads.
- **Area Sources:** Small individual sources of emissions such as gasoline distribution and marketing, solvent usage, and others.
- **Nonroad Mobile Sources:** Motor vehicles and equipment such as lawn & garden tools, construction equipment, locomotives, and aircraft.

The EPA currently requires states to develop periodic emissions inventories (PEI) of ozone precursor pollutants every three years for ozone areas to support planning and progress tracking.

Air Quality Modeling

Air Quality analyses are used to simulate the combination of meteorology, emissions, and atmospheric chemistry that promote ozone formation and higher ambient concentrations in a given area. Once a representative scenario, or episode conducive to ozone formation, based on an actual observed ozone event is selected and validated, various emission reduction strategies can be tested to predict whether they would succeed in reducing ozone and attaining the ozone standard. The major steps involved in photochemical modeling are as follows:

- Selection of type and geographic scale of photochemical model
- Selection of representative ozone episode(s)
- Base case episode modeling and validation
- Future year projection and attainment demonstration modeling

These major steps and specific VDEQ early action modeling plan are discussed below:

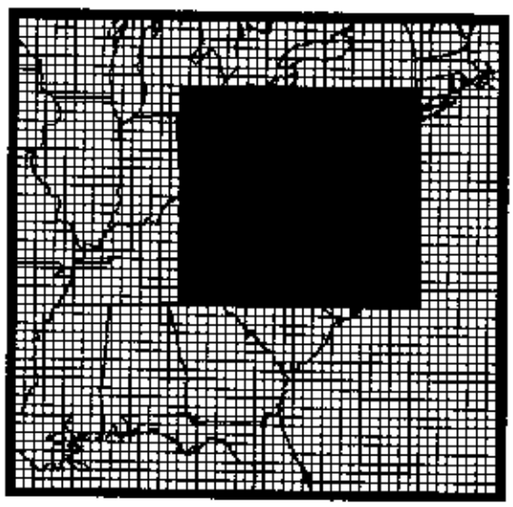
Model and Domain Selection

Due to the regional nature of ground level formation and transport that is prevalent in the Eastern United States, combined with the reasonable assumption the early action areas are impacted by ozone transport, a regional photochemical modeling exercise has been selected for these projects. This selection will allow for the evaluation of the impact of transport on the study areas, as well as the impact of regional and national control strategies in reducing ozone transport into these areas.

The model selected for this purpose in EPA's MODELS3/CMAQ model which is EPA latest modeling platform for such analyses. The meteorological inputs required to run the model will be developed using the MM5 meteorology model, and the emissions inputs will be developed using the SMOKE emissions preprocessor model. The purpose of these model data input preprocessors is to temporally and spatially allocate these inputs to a grid system used by the photochemical model to recreate the atmospheric interaction of all these factors in promoting ozone formation.

Due the need to model a larger region for ozone transport assessment, a regional domain that covers a large portion of the Mid-Atlantic States has been selected. The domain will consist of a series of descending grid cells from 36 kilometers (km) at the edges of the domain, to 12 km in the Mid-Atlantic area, and possibly 4 km grid cells centered on Virginia. In this way the resolution of the model and modeling results will be the highest in and around the early action planning areas. This modeling domain is shown below:

Early Action Modeling Domain of 36 km & 12 km Resolution

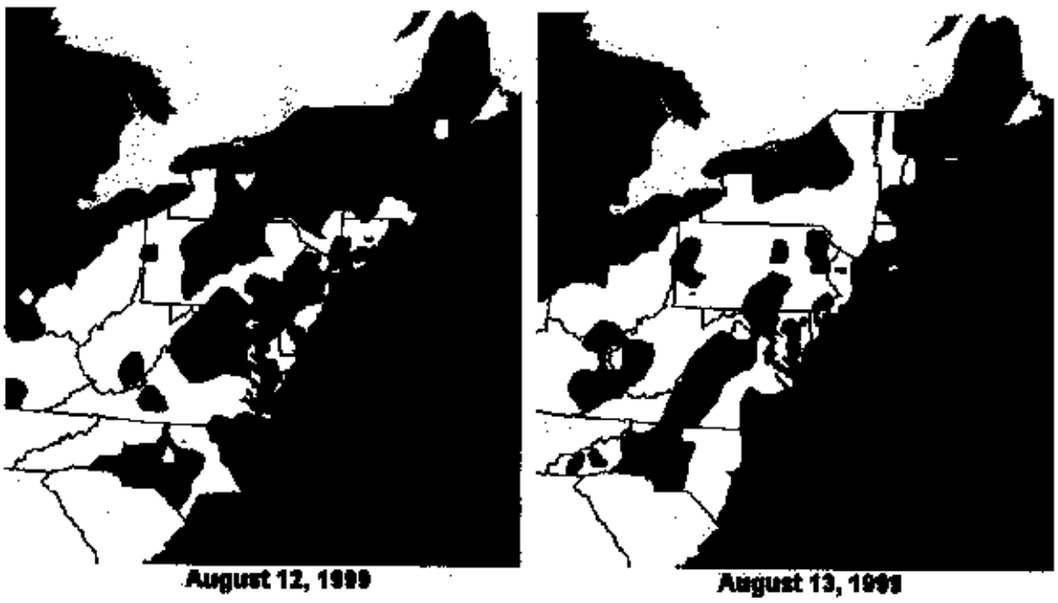


Episode Selection

One of the key aspects of a modeling analysis of a particular area and air pollution problem is to select one or more representative episodes to model. The selection process should reflect one or more of the prevailing meteorological and emissions conditions that produce higher levels of ozone in the subject area. An additional consideration for this project is that EPA guidance requires that the baseline emission inventory and subsequent episode(s) selected for an early action plan are no older than 1999. Finally, since three states are developing plans in the same general area, an episode common to all three was selected.

The result of this process produced an ozone episode that occurred on August 12th and 13th in 1999. This episode was selected mainly because exceedences of the ozone standard were observed at all the area monitors involved in this effort during this period. To adequately simulate the events leading up and following this episode, a ten day period from August 8th to the 18th will be modeled. After the completion of this modeling exercise, an additional episode, probably in 2002, will be selected and modeled to retest and confirm the results of the initial modeling. The EPA ozone maps of the August 12th & 13th, 1999 episode are shown below:

The Ozone Episode of August 12th & 13th During 1999



August 12, 1999 August 13, 1999

Modeling Progress to Date

A 1997 episode was originally selected to support the development of the early action plans since emissions and meteorological data were readily available and quality assured. However, subsequent to this decision, EPA early action plan guidance required that inventories and episodes no older than 1999 be used in this effort. As a result, the episode described above as been selected to support the air quality planning effort. However, this change in the modeling plan and episode has resulted in a change to the modeling project schedule.

As of the date of this document, VDEQ has obtained the necessary meteorological data for the 1999 episode and has completed the preprocessing of this data through the MM5 model. Emissions data for 1999 from all states in the modeling domain has also been obtained from the NEI. This emissions data has been supplemented with state specific data from Virginia and West Virginia. The preprocessing of this data through the SMOKE emission model will soon be completed. After the conclusion of these data processing tasks, the modeling of the 1999 base case episode will begin. The base case modeling exercise is scheduled to be completed by the end of August 2003.

Attachment A
Eastern Panhandle Air Quality Task Force
List of Members

Berkeley County Members

Berkeley County Commission
Howard Strauss
Deborah Hammond
Norwood Bentley

City of Martinsburg
Mayor George Karos
City Manager Mark Baldwin

Berkeley County Development Authority
Bob Crawford

Roach Oil Company
Scott Roach

Affiliated Construction Trades
Larry Young

Swift Transportation
Greg Kraft

United Way
Jan Callen

City Hospital
Bill Cornett

Berkeley County Schools
Ernie Dotson

West Virginia National Guard
Major Rodney Dotson

Hagerstown Metropolitan Planning Organization
Bob Gordon

Eastern Panhandle Transit Authority
Linda Mason

Jefferson County Members

Jefferson County Commission
Jane Tabb

Jefferson County Development Authority
Jane Peters

Jefferson County Health Department
Lisa Dunn

Jefferson County Chamber of Commerce
Mary Via

Jefferson County Schools
Russ Fitzgerald

DALB, Inc.
Chris Ott

Spectra Tech International
Sam Adams

Jefferson Memorial Hospital
Robin Akin

Community Oil Company
Heather Morgan

Kidde Fire Fighting
Ed Carroll

Others:

Small Business Development Center
Christina Lundberg

Office of Governor Wise
Locke Wysong

Shepherd College
Yet to be named

West Virginia Department of Transportation
Richard Warner
Jack Pascoli

West Virginia Department of Environmental Protection
Fred Durham

American Lung Association and Highway Safety
Barbara Orlando

CSX Transportation Corp. - Baltimore
Sharon Disque

Attachment B
Eastern Panhandle Air Quality Task Force
Public and Stakeholder Involvement Summaries

Eastern Panhandle Early Action Compact
Meeting of Air Quality Task Force
12 p.m., 4/23/03
Bowles-Rice Law Offices
Martinsburg, WV

The newly formed Air Quality Task Force, a diverse group of stakeholders in the Berkeley – Jefferson County area of West Virginia convened to discuss the status of air quality plans for the area. The Task Force includes representatives of local governments, planning organizations, businesses and health and environmental organizations.

The meeting was opened by Norwood Bentley, Berkeley County Attorney, and began with self introductions of the approximately 27 attendees. The meeting was then turned over to Fred Durham, from the W. Virginia Department of Environmental Protection (DEP) who made a presentation on the status of air quality issues in the area.

Mr. Durham focused on providing background on West Virginia's air pollution problems and the requirements for ozone nonattainment areas. He also discussed various aspects of the ozone early action compacts and the deadlines that must be met for US EPA milestones. Mr. Durham reported that required photochemical modeling for the area's early action plan will be performed by the Virginia DEQ (Department of Environmental Quality), the agency that is also handling modeling for the adjacent Winchester -Frederick County area in Virginia.

Mr. Durham advised that in his opinion, the US EPA would expect submission of mandatory as well as voluntary measures for the area's local emissions control strategies. He went on to say that the area could also consider extension of state RACT (Reasonably Available Control Technologies) requirements to the Martinsburg area as part of their strategy to demonstrate attainment.

Representatives from Wilbur Smith Associates, Tim White and Carla Berroyer, then presented additional information to Task Force Members for their consideration. Documents distributed to Task Force Members included copies of the April 4, 2003 US EPA guidance regarding submittal requirements for Early Action Compacts, a master list of potential emissions control strategies, and a sample of emissions control strategies selected by other metropolitan areas.

A general discussion proceeded regarding actions that must be taken during the next few weeks in order to meet US EPA mandated deadlines. Task Force members would be reviewing the WSA materials prior to the next meeting.

The Executive Committee of the Task Force set a meeting for 2:00 p.m., April 30 and the full Task Force agreed to reconvene at 2:00 p.m. on May 7.

Eastern Panhandle Early Action Compact
Meeting of Air Quality Task Force
2 p.m., 5/7/03
Bowles-Rice Law Offices
Martinsburg, WV

The Eastern Panhandle Air Quality Task Force met on May 7, 2003 to discuss actions needed to be taken to meet the June 16, 2003 deadline set by US EPA for submittal of initial local emissions control strategies. This submittal should include all strategies that are being seriously considered for implementation in the Berkeley and Jefferson county areas to reduce emissions and to demonstrate attainment by 2007.

The meeting was facilitated by Carla Berroyer, from Wilbur Smith Associates, who presented a paper for discussion which included a variety of control strategies for consideration based on input from Task Force members and the plans of other areas. Self introductions were made by the 22 Task Force members in attendance and by West Virginia Department of Transportation (WVDOT) staff joining the meeting via teleconference.

The discussions focused on the following control strategies:

- Ozone Action Days
  A discussion of the types of measures that could be instituted on days when ozone violations are predicted ensued including the need for coordination with Washington County, Maryland and Frederick County, Virginia. The potential for beginning with several "voluntary" type measures and progressing to more stringent measures was also discussed.

- Public Education and Information
  The Task Force members discussed the need for public involvement and education activities as soon as possible. Educating citizens through local employers was suggested as one way to reach the public and increase their knowledge and participation in the program.

- Parking and Parking Management
  Task Force members discussed the need for Park and Ride facilities and the large percentage of Jefferson County residents that commute out of the county to work. WVDOT representatives said they would look into the provision of park and ride facilities. Parking management options were briefly discussed, but questions were raised regarding their feasibility in this area.

- Bicycle/Pedestrian Measures
  A discussion of the usefulness of bicycle and pedestrian related measures indicated that a number of these activities were taking place in the area. It was suggested that a discussion should take place with the Metropolitan Planning Organization (MPO) Liaison to check bicycle related plans. Also, it was suggested that improvements to the pedestrian environment would make sense in Martinsburg.

- Employer Based Programs
  Considerable discussion took place on the idea of working with local employers to encourage emissions reduction activities. These included compressed work week, telecommuting centers, and employer incentives for carpools and transit ridership. A question was raised regarding the possibility of coordinating with the Washington DC area, since so many areas residents commute to work there.

- Area Sources
  Fred Durham of the West Virginia Department of Environmental Protection (WVDEP) discussed the possible adoption of RACT requirements for point and area emissions sources in the area. He reported that emissions reductions from RACT were generally more cost effective than from many of the transportation control measures. Some grants are available to private businesses for pollution prevention activities.

- Other Potential Measures
  The group also discussed potential measures involving school bus fueling, truck idling restrictions, and "Green Building" initiatives. The Consultant agreed to contact the MPO and WVDOT to find out what types of traffic flow or ITS improvements might be contemplated for the area. A brief discussion also took place regarding the need for local agency support for actual implementation of these activities.

Given the tight schedule, the group decided that public meetings should take place as soon as possible in both Berkeley and Jefferson Counties. It was determined that public meetings could be held in Martinsburg on June 3 at 7 p.m. and in Charlestown on June 4 at 7 p.m., exact locations yet to be determined.

The consultant (Wilbur Smith Associates) will refine the potential list of local emissions control strategies according to the input received at the Task Force Meeting and prepare a draft list for public comment and subsequent revision and endorsement by the Task Force.

Eastern Panhandle Air Quality Task Force
Public Meeting
June 3, 2003
Martinsburg, West Virginia
Meeting Summary

A Public Meeting was held on June 3 from 7 p.m. to 9 p.m. to discuss the submittal of potential emissions control strategies to US EPA for the June 16th milestone requirement of the Early Action Compact. Mr. Fred Durham made a comprehensive Power Point presentation on the status of air quality efforts in the state of West Virginia as well as progress that has been made to date on the Early Action Compact. Mr. Tim White, of Wilbur Smith Associates – consultant to the Eastern Panhandle Task Force was also present and answered questions for participants. After the formal presentation, attendees were given the opportunity to provide comments and ask questions in a casual open house atmosphere. Attendees were also asked to fill out a comment form

which asked for opinions regarding the types of strategies individuals would support for an Ozone Action Days Program.

Attendance at the event was light (10 persons signed the attendance list). However, the meeting did generate media attention for the EAC activities. (Media clips are included at the back of this attachment.)

Responses to the Ozone Action Days questionnaire at this meeting indicated that attendees were generally in favor of carpooling, public transportation, bicycling, walking, telecommuting, idling restrictions, and deferral of lawn maintenance activities during high ozone episodes. Less support was expressed for reducing speed limits and parking charges.

Eastern Panhandle Air Quality Task Force
Public Meeting
Charles Town, West Virginia
June 4, 2003

A Public Meeting was held on June 4 from 7 p.m. to 9 p.m. in Jefferson County with essentially the same presentations and format as the meeting on June 3 in Martinsburg. This meeting was also lightly attended, (nine people signed the attendance list) but did generate media attention for the Early Action Compact activities.

The questionnaire regarding Ozone Action Days generated a number of positive responses for measures such as car pooling, bicycling, telecommuting, refueling after dark, bio-diesel fuels, idling restrictions, and increased use of public transportation if the service is made available. Less support was expressed for increased parking charges and increased speed limit enforcement.

Opinions gathered at these public meetings were discussed in the final preparation of the listing of potential emissions control strategies under consideration submitted to US EPA.